ART 34 AMDT

CLAIMS

1. (amended) An aluminum nitride sintered body having a maximum length of 320 mm or more, a thickness of more than 0 mm and 2 mm or less, a warpage of 0 μm/mm or more and less than 1 μm/mm, and a local waviness height of 0 μm or more and 50 μm or less after a sintering step is finished.

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ART 34 AMDT

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23. (added) An aluminum nitride sintered body having a maximum length of 320 mm or more, a thickness of more than 0 mm and 2 mm or less, a warpage of 0 μm/mm or more and less than 1 μm/mm, and a local waviness height of 0 μm or more and 50 μm or less, wherein the aluminum nitride sintered body is formed by polishing one side of the sintered body according to claim 1 with a polishing allowance of 10 μm or less.

24. (added) The aluminum nitride sintered body according to claim 1 or 23, wherein the sintered body has a thickness less than 1 mm.

25. (added) The aluminum nitride sintered body according to claim 1, 23 or 24, wherein the body has a thermal conductivity in the range from 85 W/m·K to 105 W/m·K and is used for a heater substrate.

26. (added) A metallized substrate comprising a plate-shaped substrate made of the aluminum nitride sintered body according to any one of claims 1 and 23 to 25, and an electrically conductive metallized layer formed on at least a part of the substrate.

27. (added) A metallized substrate having a warpage of 0 μm/mm or more and 5 μm/mm or less, comprising a substrate including an aluminum nitride sintered body having a maximum length of 320 mm or more, a thickness of more than 0 mm and 2 mm or less, and a local waviness height of 0 μm or

more and 50 μm or less, and an electrically conductive metallized layer formed on at least a part of a surface of the substrate.

28. (added) A heater comprising: the metallized substrate according to claim 26 or 27; an electrode part arranged on the metallized layer and connected to the metallized layer; and an insulating layer arranged on the metallized layer.

29. (added) A method for producing an aluminum nitride sintered body, comprising the steps of: preparing a raw material containing a binder and a major material of aluminum nitride; forming a sheet-shaped molded body using the raw material; natural drying of the molded body for 10 hours or more; removing the binder from the molded body after the drying step; and sintering the molded body free of the binder, wherein the sintering step is performed by arranging the molded body in a space surrounded by a jig comprising boron nitride as a major component, wherein the ratio of the volume of the molded body to the volume of the space is in the range of 20% to 60%.

30. (added) The method for producing an aluminum nitride sintered body according to claim 29, wherein the sintering step is performed by arranging the molded body one by one in the space surrounded by the jig comprising boron nitride as the major component.

31. (added) The method of producing an aluminum nitride sintered body according to claim 29 or 30, wherein the jig has a depressed portion on the top surface of a flat plate-shaped base to arrange the molded body, and the

sintering step is performed in a state wherein a plurality of said jigs are piled up to form a jig pile.

32. (added) The method for producing an aluminum nitride sintered body according to claim 31, wherein the sintering step is performed in a state wherein the jig pile is placed inside a case made of a metal material.

33. (added) A jig used in a sintering step to produce an aluminum nitride sintered body having a maximum length of 320 mm or more and a thickness of more than 0 mm and 2 mm or less, comprising a flat plate-shaped base containing boron nitride and having a depressed portion formed on the surface of the base to arrange the molded body, wherein dimensions of the depressed portion are determined such that the ratio of the volume of the molded body to the volume of the depressed portion being in the range of 20% to 60%.